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VALUATION OF RAILROAD RIGHT-OF-WAY[1]

I

A specific provision of the federal Valuation act of March 1, 1913, requires the Interstate Commerce Commission to

> investigate and report in detail, separately from improvements, the original cost of all lands, right of way and terminals owned or used for the purposes of a common carrier, and ascertained as of the time of dedication to public use, and the present value of the same, and separately the original and present cost of condemnation and damages or of purchase in excess of such original cost or present value.

There is also to be shown separately the value of property held for purposes other than those of a common carrier, and the original cost and present value of the same.

The motive for these requirements is obvious to all who have followed the debates and arguments leading up to the passage of the Valuation act. Many who favored the law held to the theory that railroads are not entitled to appreciation of land values in a "cost-of-reproduction" estimate; that such appreciation is of the nature of an unearned increment not produced by the railroads and to which they have no just claim; that to allow an appreciated figure conformable to that of the market value of surrounding lands would result in constantly increasing the reproduction cost on which claim for a "fair return" can be made in rate controversies.[2]

The fear that the allowance of *present value* of railroad right-of-way and terminals will be used by the carriers in justification of claims to constantly higher rates, seems to have been engendered by the Supreme Court statement in *Wilcox* v. *Consolidated Gas Co.* that "if the property which legally enters into the consideration of rates has increased since it was acquired, the Com-

[1] The expression "right-of-way" signifies land which a railroad corporation owns or is entitled to use, and is so defined by the United States Supreme Court in *St. Louis, K. C. & C. R. R.* v. *Wabash,* 217 U. S. 247.

[2] Senator La Follette in reporting the Valuation act to the Senate remarked: "The primary purpose in establishing these values (*i.e.,* original cost and present value of lands) separately, I shall state very frankly. It is to put into the possession of the Commission and upon record the data which will enable us ultimately to try out the question and determine the right of the railroads to capitalize the unearned increment." (Cong. Rec., Mar. 15, 1913, p. 5132.)

pany is entitled to the benefit of such increase."[3] However, it is clearly manifest from other rate decisions of the Supreme Court (including the Minnesota rate cases) that no claim to higher rates would be legally justified merely because there had been an increase in real estate values. Even in the Wilcox case, the court made an exception to its application "where the property may have increased so enormously in value as to render a rate permitting a reasonable return upon such increased value unjust to the public." As pointed out by Justice Swayze, if a gas plant were by a fortunate accident to have located at Broad and Wall Streets, New York, and to have remained there despite the high rental value of the site, the courts would certainly not grant a rate which would yield a return on the increased value of the land. "Prudent management would require removal to a less expensive site better adapted to the business."[4]

One theory advanced in opposition to the allowance of present value in railroad land appraisal is that there exists between the public and the railroads the relation of principal and agent. Accordingly the carrier, as an agent, "cannot claim a return on the increased value of the property used in the agency."[5]

This argument is without legal sanction and breaks down in its practical application. If railroad investors as agents of the public must yield all but a proper compensation to the public, they are in justice entitled to be reimbursed for all losses honestly and judiciously incurred in their capacity as agents. American railroads, however, have not been built or operated on this legal theory. The public does not owe the railroad proprietors the money invested in the railroad property. The public has no obligation to reimburse in case of failure and may not appropriate the rewards of success. As Justice Hughes in the Minnesota rate cases pointed out:

[3] 212 U. S. 52.

[4] "The Regulation of Railroad Rates under the Fourteenth Amendment," *Quarterly Journal of Economics*, May, 1912. See also *San Diego Water Co.* v. *San Diego*, 118 Cal. 556; and *Western Rate Advance Case*, 1911, p. 31, in which Commissioner Lane pointed out: "It is a conservative statement of the law to hold that a railroad may not increase the rates upon a number of commodities solely because its real estate has risen in value."

[5] See "A Just and Scientific Basis for the Establishment of Public Utility Rates with Particular Attention to Land Values," by Max Thelen in the *Proceedings of the Twenty-fifth Convention of the National Association of Railway Commissioners*, 1913.

It is clear that in ascertaining the present value we are not limited to the consideration of the amount of actual investment. If that has been reckless or improvident, losses may be sustained which the community does not underwrite. As the company may not be protected in its actual investment, if the value of its property be plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership, and it is that property and not the original cost of it, of which the owner may not be deprived without due process of law.[6]

Ex-Commissioner Milo R. Maltbie, of the New York Public Service Commission, in an opinion regarding rates of the Queens Borough Gas and Electric Company, June 23, 1911, endeavored to get around the court decisions which permit the inclusion of appreciated land values as a part of reproduction cost by assuming that the appreciation in land may be treated as income, and as income it becomes a part of the rate of return, the reasonableness of which is in question.

Unless this is done, it is obvious that the consumer will be burdened with all the estimated decreases in assets but not credited with the increases in assets. If the principle laid down by the courts is to be followed in part, it should be followed in whole.[7]

This theory is favored by Dr. E. W. Bemis[8] and by Dr. Robert H. Whitten. In support of his contention, Dr. Whitten quotes the rules laid down by the United States Commissioner of Internal Revenue under date of December 15, 1911, for the purposes of the special excise tax on corporations. These rules provide that profits realized on the sale of real estate and also the appreciation of unsold property *if taken up on the books* shall be included in the income of the corporation subject to the tax. Dr. Whitten adds:

It is true that under this ruling appreciation in value of unsold property is not included in current income unless such appreciation is taken up on the books of the corporation, but equitably in a rate case such appreciation is taken up whenever the corporation claims a return on the appreciated value.[9]

The fallacy of this reasoning lies in the failure to distinguish between accounting procedure and equitable valuation. Account-

[6] 230 U. S. 454.

[7] See Whitten, *Valuation of Public Service Corporations*, vol. I, p. 121.

[8] See *Report on Investigation of Chicago Telephone Company*, pp. 36-37.

[9] Whitten, *op. cit.*, Supplement, p. 937.

ing is a procedure for determining the effects of current transactions expressed in monetary values. Valuation, however, is a procedure for determining hypothetically the sacrifice that investors would be compelled to undergo in reproducing or fully restoring a property which at the time of the valuation is assumed to be entirely non-existent. To treat land appreciation in valuation proceedings as income would be to assume: (1) That the income could be attributed to the transactions of a definite period, and (2) that such income has been converted or could be converted into cash or its equivalent. This would imply that there are purchasers ready to take over the whole or any part or parcel of the lands at their appreciated value. It assumes that every fixed item of capital investment has a convertibility represented in cash and cash items, whereas in accounting practice a rigid distinction exists in the valuation of fixed assets so-called and of current assets. In the valuation of current assets there is *an assumption of current market value*, and the rule is that such assets must be valued at cost or market value whichever is the lowest. In the valuation of fixed assets, however, *there is no assumption of market value*: first, because such property is not held for purposes of sale, and, second, because such property being of a definite, specialized, fixed character has no market value separately from the entire plant. Upon these grounds, Judge Clark of the New York Appellate Division of the Second Department in *Kings County* v. *Wilcox* refuted Mr. Maltbie's theory:

> The land is used for the business of the company and is appropriate therefor. So long as the land is held and used for such purpose, increase in value can not be considered as income or as available for the payment of debts, taxes, or dividends.[10]

Whether in the present federal valuation of railroads the "present value" or the "original cost" of right-of-way or terminal grounds will or will not be finally adopted does not diminish the difficulties of the actual work of land appraisal. Certainly, the problems are of such importance as to require the most careful investigation and the utmost caution in the adoption of stand-

[10] 156 App. Div. N. Y. 608, May 9, 1913. This case was affirmed by the New York Court of Appeals (210 N. Y. 479) thus: "We agree with the Appellate Division that annual increase in the value of land is not income. Of course, under the rule of Ames case (supra), land might become so valuable as to require its use for other purposes and as to make a rate based on it unfair to the public. The present is not such a case."

ards for estimating either original cost or present value. Neither the legal nor the economic data furnish definite gauges for proper appraisal in all cases. This was the contention of Justice Hughes in the Minnesota rate decision.[11] It was also suggested by Justice Peckham, who in *Wilcox* v. *Consolidated Gas Co.*, referred to the valuation of real estate as a "matter of speculation or conjecture to a great extent."[12]

II

Probably the best approach to the subject of railroad land values is a consideration of the nature of railroad land purchases. A railroad right-of-way purchase is not the simple acquisition of real estate. The railroad right-of-way, moreover, is not merely an easement limited to the strict technical sense of the term. It does not denote a right used in common with others, but is *an exclusive ownership or use of the land* which continues in the railroad as long as such land is used for railroad purposes. The value of ownership for railroad purposes, however, is restricted to the "situs"; so that ordinarily the *fee* is of little value unless the land is underlaid with quarry or mine."[13]

It is the practical necessity of exclusive use and the resulting full ownership of the right-of-way which gives the railroad its character of a private owner appropriating land for a public use. The requirement of continuity and gradient, and the peculiar adaptation of certain locations for these purposes, places the railroad company in the position of a forced purchaser. The legal consequence has been the application of the right of eminent domain to railroad land purchases. In the exercise of this right, the principles of law and economics have been applied in a way which clearly indicate that *the circumstances ordinarily controlling purchase and sale* (*i.e., free exchange*) *have very little influence.* In other words, the psychological basis of bargaining is ignored, for the legal concept of full compensation for damages sustained does not admit a scale of profit to the owner warranted by the needs of the purchaser, neither does it permit tests of the financial abilities of the appropriator.

[11] Thus Justice Hughes stated: "By reason of the nature of the estimates and the points to which the testimony was addressed, the amount of the fair value of the company's lands cannot be satisfactorily determined from the evidence."

[12] 212 U. S. 50.

[13] *Smith* v. *Hall,* 103 Iowa 95.

With these considerations in mind, it seems somewhat ridiculous to apply the term "market value," to railroad right-of-way. Real estate is not a commodity currently interchangeable with other commodities of the same kind. Each specific parcel is a unit in itself, fixed and non-interchangeable, and in but very few cases identically similar to other parcels. Consequently, applying the term "market value" to real estate is erroneous unless it is assumed to have a peculiar application differing from the common concept.[14]

In land condemnation cases the courts have sought to define "market value" as applied to land. But these definitions relate rather to an enumeration of elements determining "fair value" than to a correct determination of an economic concept. Thus, "market value" is said to depend on a fair consideration of the location of the land, the extent and condition of its improvements, its quantity and productive qualities, and the use to which it may reasonably be applied.[15] In practice, however, these elements are frequently considered in relation to the selling price of neighboring land, for the influence of example is undoubtedly great in fixing standards. Consequently, many courts have allowed testimony regarding actual sales of similar property made at or about the time of the taking.[16] Yet, as applied in condemnation proceedings relating to appropriation of real estate for right-of-way purposes, actual sales, or the elements ordinarily determining market value, are frequently of little weight, for it is not the area or the location or the productiveness of the land taken for railroad purposes which is the measure of damages. It is *the diminution in the value of the whole parcel from which the right-of-way strip is severed.*[17] This has become a fixed principle of law. Notwithstanding its general acceptance, however, it is the belief of many public utility experts, because of a decision of the highest judicial tribunal[18] that a "fair average of the normal

[14] "The market value of land is in a sense uncertain. It cannot be determined as are securities on stock exchange transfers. It depends on many conditions which affect the judgment and opinion of a witness." *Hewett* v. *Pitts. etc. R. R. Co.*, 19 Pa. Super. Ct. 304.

[15] See *Cochran* v. *Mo. etc. R. R. Co.*, 94 Mo. App. 469, 68 S. W. 367; *Pitts. etc. R. R.* v. *Vance*, 115 Pa. St. 325, 8 Atl. 764; *Hewett* v. *Pitts. etc. R. R. Co.*, 19 Pa. Super. Ct. 304; *Meyer* v. *Chicago, etc. R. R. Co.*, 68 Wis. 180, 31 N. W. 710; *Spring Valley Water Works* v. *Drinkhouse*, 92 Cal. 528.

[16] See Lewis, *Eminent Domain*, 3d ed., sec. 662 and cases cited.

[17] See *Baumann* v. *Ross*, 167 U. S. 575 *et seq.* and numerous other decisions.

[18] *The Minnesota Rate Cases*, Sen. Doc. No. 54, 63 Cong., 1 Sess. (230 U. S. 352).

market value" of land in the vicinity having similar characteristics is the full measure of railroad right-of-way value.[19]

In condemnation proceedings courts have uniformly held that in the acquisition of land for railroad purposes, two values are concerned: first, the value of the total property before any part thereof is appropriated; second, the value of the remaining part left to the owner after the appropriation is made.[20] Damages are therefore assessed as a differential, *i.e.*, the difference between the "market value" of the whole parcel and the "market value" of the unappropriated portion *after severance*. In view of this principle, right-of-way value is different in character from ordinary land value, since the cost on which the value is based as compared with the value of whole parcels of similar real estate is not determined primarily by area. Accordingly, right-of-way is not appraised correctly when the appraisal is based *solely* on ordinary real estate transfers.

It is a common dictum of the courts that in the exercise of the right of eminent domain "the damages are to be assessed with reference to the detriment of the owner, not with reference of the value of the land to the railroad company by which it is taken."[21] But the use for which the land is appropriated and the need of the appropriator with reference to the land are undoubtedly the most influential elements in determining the amount of the award. The first element has been interpreted as "the profitableness of the present and prospective uses to which the land has been put." In the leading case, *Boom Company* v. *Patterson*,[22] it was held that, although the exclusive privilege granted to a logging company to use for logging purposes a river in which three islands were located made those islands valueless for booming purposes to any other company than the one having the monopoly, the fact that these islands had a peculiar value for booming purposes must be taken into consideration in awarding damages for their appropriation. Thus the court held:

[19] See oral argument of Mr. Max Thelen on behalf of the National Association of Railway Commissioners before the Interstate Commerce Commission, January 29, 1916.

[20] See *Hewitt* v. *Pitts. etc. R. R. Co.*, 19 Pa. Super Ct. 304; *Minn. etc. R. R. Co.* v. *Waldron*, 11 Minn. 515; *McReynolds* v. *Kansas City etc. R. R. Co.*, 110 Mo. 484, 19 S. W. 824, etc.

[21] Ex parte *B. H. T. & W. R. R. Co.*, *22* Hun. 176.

[22] 98 U. S. 403.

The inquiry in such cases must be, what is the property worth in the market, viewed not merely with reference to the uses to which it is at the time applied, but with reference to the uses to which it is plainly adapted; that is to say, what is it worth from its availability for valuable uses.[23]

This dictum is upheld in subsequent cases, notably that of *United States* v. *Chandler-Dunbar Co.*, in which it is stated that when a possible use for land has "passed beyond the realm of the purely conjectural or speculative," this use is to be considered in condemnation proceedings"[24] and in *New York* v. *Wm. Sage*, decided November 8, 1915, which supports the contention that "the fact that the most profitable use could be made only in connection with other lands is not conclusive against it being taken into account."[25]

Mindful of the legal precedents as well as the actual railroad experience in acquiring lands, appraisers of railroad property have generally made allowance in some way for the additional rights other than the fee to the land acquired in the purchase of railroad right-of-way. The Minnesota rate case decision of June 9, 1913, in which the increment of "railroad value" was discountenanced and nothing above the average normal market value of contiguous and similarly situated property was granted as the basis of appraisal, would seem to nullify common precedent in railroad valuation. A careful study of Justice Hughes's opinion, however, does not warrant this belief. There is no specific denial that railroad companies pay more for right-of-way than is obtained in ordinary land transfers. In fact, the Justice quotes from *Boom Co.* v. *Patterson* that "special adaptation for railroad purposes would be an element to be considered" in condemnation

[23] 98 U. S. 408.

[24] 229 U. S. 53. See also *Shoemaker* v. *U. S.*, 147 U. S. 282 and *Kerr* v. *Park Commissioners*, 117 U. S. 379. Also *Goodwin* v. *Canal Co.*, 18 Ohio 169 (quoted in *Boom Co.* v. *Patterson*) where a railroad sought to appropriate a canal bed, the court held that the rule of valuation was: what the interest of the canal company was worth *not for canal purposes or for other particular use* but generally for any and all uses for which it might be suitable. Recently in proceedings by one railroad company to condemn for railroad purposes the land of another, the Pennsylvania supreme court held that the fact that the owning company had ceased to operate did not limit the damages to the value of the ground for agricultural purposes, but permitted recovery on the basis of its value by reason of its availability for the location of a railroad. *North Shore* v. *Pennsylvania Co.* (Pa.), 96 Atl. 990.

[25] *Advance Opinions* (U. S. Supreme Court, Oct. Term, 1915), p. 25.

proceedings. He held, nevertheless, that in the case before the court "there was no evidence from which the amount which would be properly allowable in such condemnation proceedings can be ascertained." The method followed in the appraisal of Minnesota railroads (the application of a multiple to average market value of contiguous lands to represent the increment of railroad value) was unsatisfactory. In the language of the court, "it was conjectural."

> An attempt to estimate what would be the actual cost of acquiring the right-of-way if the railroad were not there, is to indulge in mere speculation. . . . The cost-of-reproduction method is of service in ascertaining the present value of the plant when it is reasonably applied and when the cost of reproducing the property may be ascertained with a proper degree of certainty, but it does not justify the acceptance of results which depend upon mere conjecture.

The conclusion of the court is:

> Assuming that the company is entitled to a reasonable share in the general prosperity of the communities which it serves, and thus to attribute to its property an increase in value, still the increase so allowed, apart from any improvements it may make, cannot properly extend beyond the *fair average of the normal market value* of land in the vicinity having a similar character. Otherwise we enter the realm of mere conjecture.[26]

Notwithstanding this conclusion, no criterion is stated for determining "fair average of the normal market value," the court merely rejecting the method pursued by the master, inasmuch as: "By reason of the nature of the estimates and the points to which the testimony was addressed, the amount of the fair value of the company's land cannot be satisfactorily determined from the evidence."

The Minnesota rate decision in reference to land valuation established two principles:

1. Railroad right-of-way and terminal grounds regardless of original cost or method of acquisition are to be appraised on a "present value" basis.

2. The "multiple" or factor representing damages from severance and the like is not to be computed on a conjectural basis.

The effect of these principles is far-reaching. The first nullifies the principal and agent theory regarding land acquired and held for railroad purposes. The second, though not denying

[26] 230 U S. 455, also Sen. Doc. No. 54, 63 Cong., 1 Sess., p. 46. The italics are the author's.

excess cost of railroad land over ordinary real estate, requires the establishment of higher values by definite proof. This entails detailed study and investigation of experience in right-of-way acquisition and the separate appraisal of each parcel or zone of railroad land not only with reference to its peculiar value for railroad purposes but also with reference to contiguous land values and to the severance and other damages caused by the construction and operation of the railroad.

III

Passing from the consideration of the legal principles underlying railroad land valuation to the practices, methods, and results of actual appraisals, we are confronted with a variety of precedents and a disconcerting lack of harmony in methods. The earliest state-wide railroad appraisal, that of Texas in 1894, was too cursory in character to form a precedent; moreover, in the sparsely settled state of Texas, land values were not sufficiently great to form an important factor in final results. The valuation was made for the purpose of regulating security issues. The value applied to right-of-way and real estate was in accordance with current market value of other property immediately adjoining, disregarding donations or property acquired at less than value.

In 1900 the state of Michigan made an appraisal of railroad property for taxation purposes. The estimates of special appraisers and real estate experts were relied upon for determining land values. It was recognized, however, that there was a special value attaching to railroad lands. Accordingly, in order that such value be included for taxation purposes, an increment was applied to the values as determined by experts. We have here probably the first instance of the application of "multiples" to the so-called "naked" values—a practice that subsequently became the rule in railroad appraisals.

The first Michigan appraisal was completed within a period of 121 days. In this brief space of time, it was practically impossible to make a fair investigation of land values. Although railroad lands in large cities were personally examined by special appraisers who, it is stated, conferred with real estate agents and other experts, and made estimates on an acreage or square foot basis, the lands outside of the cities were merely classified in accordance with population of the districts, and "naked" land values ascertained largely by correspondence with real estate men and

bankers.[27] To the land values thus ascertained there was added a percentage varying from 100 to 200 per cent, plus a fixed charge ranging from $3 to $8 per acre to cover cost of acquisition and the like.[28]

The methods first applied in Michigan were not considered satisfactory. Accordingly, in the next appraisal, that of 1902, a more careful study was made. With a view to determining actual railroad experience in acquiring land, county real estate registration offices were visited, and abstracts were made of all transfers within a period of ten years. From these data the average price paid per acre for different classes of land was computed. Then, in order to obtain a basis of comparison, a very careful study was made of transfers of both improved and unimproved land lying adjacent to railroads. The average price of these land transfers, when compared with the Michigan valuation of 1900, showed that the early appraisal had considerably undervalued railroad real estate.

The experience in Michigan was utilized to a great extent in the first (1903) Wisconsin valuation for taxation purposes. The Wisconsin Tax Commission, however, made use of an additional feature in determining land values. To the average transfer price per unit (*i.e.*, per acre, per lot, etc.) was applied a percentage or ratio representing the relation of the average assessed value of transferred land in the locality under consideration to the average price paid for such land. This feature was introduced as an additional safeguard for the correct estimate of market value.

Unlike the Michigan and Wisconsin valuations, the Minnesota appraisal of 1908, made under the auspices of the State Railroad and Warehouse Commission, was for rate-making purposes. Distinct methods were followed in determining value of large terminals and of right-of-way. In appraising terminal lands, the so-called sales method of Wisconsin was followed, including the application of a ratio or increment representing the percentage of assessed value to sale price. This was done on the principle: "As the assessed value of the lands sold is to the consideration

[27] Classification of lands was as follows; *viz.*, (1) farm land; (2) barren land; (3) villages having a population of less than 500; (4) villages from 500 to 4000; (5) cities less than 10,000; (6) cities more than 10,000.

[28] See "The Valuation of Public Service Corporation Property," by H. E. Riggs, *Transactions of American Society of Civil Engineers*, vol. 72, pp. 52-64.

paid, so is the assessed value of real estate to the entire assessment."[29]

In appraising right-of-way outside of large terminals, the Minnesota method differed from that of Wisconsin and Michigan. A number of special agents made an exhaustive study of the transfers and assessed values throughout the state. In order to arrive at a basis for estimating the "excess cost" of lands to railroads, records were made of all the recent railroad land purchases in the state. By means of this research, it was found that the railroad companies in condemnation proceedings paid 4½ times the true value of land; and in purchases, $1\frac{7}{10}$ times the true value. The so-called "true value" was determined from opinions of experts and from information furnished by the railroad companies.

In the Washington railroad appraisal of 1908, real estate transfers and right-of-way purchases were ignored. The determination of "present value" of railroad lands was delegated to three experts, men who had been buying land for railroad purposes in Washington and were familiar with prices. These men made a personal inspection of every line of road within the state and every piece of property owned by the road. In addition, testimony of real estate men in all the large cities was secured. The state board of railroad commissioners "sitting as a court" fixed the value in the same way that would be pursued in ordinary condemnation proceedings.[30]

Nebraska, in 1909 and in 1913, in addition to using recent real estate transfers also employed experts in determining land values. The market value of land was established after hearing opinions of well-versed persons in each locality and after investigation of transfers of adjacent lands and of real estate assessments. The increment above market value to represent railroad value was the resultant of the application of comparisons using (1) actual costs paid by the railroads, (2) a consideration of the treatment of this question elsewhere, (3) personal experiences, and (4) a viewing of the premises by a number of the corps. To the right-of-way value thus determined there was added—for acquire-

[29] Report of D. C. Morgan, valuation engineer, contained in the *Annual Report of the Minnesota Railroad and Warehouse Commission,* 1908.

[30] See report of H. P. Gillette in the *Second and Third Annual Reports of the Washington Railroad Commission,* p. 49.

ment, special engineering and legal expenses—a sum approximating 6 per cent of market value.[31]

In 1911, New Jersey made a railroad valuation for taxation purposes. Mr. Charles Hansel, the expert in charge, relied largely upon the assessed value of adjoining lands in making estimates of so-called "naked" land values. In order to secure accurate information relative to such assessed valuations, he prepared a form on which was indicated the area of each tract of land or lot adjoining railroad land. The assessed value of each parcel was entered on the form by the county assessors. The data thus obtained were approved by the several county taxation boards and, in some cases, were further supplemented by reference to deed books. Field engineers were also instructed to make notes of the character of land and the improvements thereon.[32] No per cent was added to ordinary land values except a sum to represent administrative cost and interest at 7 per cent. The state board, however, doubled Mr. Hansel's estimate of "naked" land value in its final estimate of the actual value of the right-of-way.

IV

It can be seen from the foregoing brief description of the leading state appraisals that methods and results in right-of-way valuation are not sufficiently definite to assist greatly in solving the problem. There is yet a wide difference of opinion as to the proper manner of computing right-of-way values. The method which has gained the most widespread favor is known as the "sales method." This was used in the Michigan railway appraisals in 1900 and 1902 and was next adopted in the Wisconsin valuations made under the provisions of the state ad valorem assessment law of 1903. It was also used in the South Dakota appraisals of 1907 and 1910. In two other states it was relied on partially, Minnesota using it in computing the present value of large terminals and Nebraska checking the results obtained by expert opinion and by reference to actual railroad land purchases.

Briefly described, the "sales method" is the systematic collection and comparison of data relating to real estate transfers for the purpose of estimating the so-called "true market" realty values. It consists of a study of the transfers of neighboring property having characteristics similar to the land whose value is to be

[31] *Report of the Nebraska Railroad Commission,* 1911, p. 451.

[32] *Report on Revaluation of Railroads and Canals, New Jersey,* 1911.

determined. Two interpretations of the "sales method" have been commonly employed. In one of these the area and consideration in each sale of similarly situated land is found, and the average unit price (per square foot, per lot, per acre, etc.) is ascertained. This unit price is applied to the tract under investigation. Such was the procedure in the original Michigan appraisal.

The other application introduces what is believed to be an additional safeguard, consisting of the use of the average assessed value of adjacent or similarly situated lands, in combination with an average ratio or percentage representing the relationship of the assessed value of transferred lands to the total consideration paid for such transferred lands in the same locality. In other words, each sale of real estate is shown under two valuations, (1) the selling price and (2) the assessed value. An average ratio of selling price to assessed value for all land in a district is then computed, and this ratio is applied to the assessed value of the right-of-way undergoing appraisement.

There is no doubt that the "sales method" as applied in Wisconsin and so well described and upheld by Professor T. S. Adams[33] is a useful process in checking local assessments and in fixing values for taxation purposes. In its application to railroad right-of-way, however, a difficulty arises from the fact that *individual purchases of railroad land apply to very small plots of peculiar shape, whereas sales of contiguous land represent large acreages.* Thus, in the Wisconsin investigation a study was made both of ordinary real estate transfers and of recent purchases of railway right-of-way in order to determine the "excess railroad cost." On one newly constructed line, 74 sales of contiguous land comprising 5604.5 acres were tabulated, making an average of 76 acres in each sale. In the 116 purchases of railroad right-of-way on the line, there were only 382.6 acres or an average of slightly more than 3 acres for each purchase. Along two other newly constructed lines, the investigation revealed similar disparities as shown by the accompanying table.

It is apparent from this table (see p. 302) that to apply merely the results of ordinary real estate transfers to railroad right-of-way values is erroneous. The conditions are altogether dif-

[33] See "Valuation of Real Estate by the Wisconsin Tax Commission," by Thomas S. Adams in *Proceedings of First Annual Meeting, Minnesota Academy of Social Science;* also *State Journal Printing Co.* v. *Madison Gas and Electric Co.,* 4 Wis. R. C. Repts. 501—535 (Mar. 8, 1910).

Investigation		Number of purchases	Total acreage	Average acreage per purchase	Total cost	Average cost per acre	Percentage of excess cost of right-of-way
Line A	Farm sales	74	5,604.50	75.8	$304,323.00	$ 54.30	522
	R.R. purchases	116	382.57	3.3	108,614.07	283.90	
Line B	Farm sales	41	10,775.00	262.8	108,927.01	10.11	407
	R.R. purchases	26	247.14	9.5	10,166.50	41.14	
Line C	Farm sales	488	39,155.70	80.3	452,309.13	11.55	316
	R.R. purchases	239	971.37	4.0	35,493.13	36.54	

ferent. In ordinary land transfers, undivided parcels of relatively large size are purchased. With railroad purchases, it is the acquisition of narrow strips in a definitely surveyed location. In the one case, transfers are on a wholesale, "bulk" basis: in the other case, purchases are on a retail, "selected," small parcel basis. The two are not comparable.

Another criticism of the "sales method" is that it involves a "sampling" process. The validity of this process depends not only on the fairness with which the samples are selected but also upon the numerical scale of the sampling with reference to the total data under investigation. In other words the "fairly selected samples" must be sufficient in number to equalize or neutralize individual peculiarities or discrepancies. From investigations thus far made under the "sales method" the inadequacy of the data is apparent. This was pointed out by the Committee on Valuation of the National Association of Railway Commissioners.[34] It was one of Mr. Hansel's reasons for rejecting the method in the New Jersey appraisal.[35] The cause lies not only in the scarcity of deeds showing actual cash consideration but also in the limitations in the selection of the samples (the "good sales"). According to Professor T. S. Adams, who is a strong advocate of the "sales method," a real estate transfer, to pass as a "good sale," must have the following qualifications:[36] (1) A full title

[34] Report of Executive Committee of National Association of Railway Commissioners on Valuation of Common Carriers, 1914.

[35] Report on Re-valuation of Railroads and Canals of New Jersey, by Charles Hansel.

[36] "Valuation of Real Estate by the Wisconsin Tax Commission," by T. S. Adams, *op. cit.*

must be passed; (2) the conditions of the sale must not be abnormal; hence, sales to railroads, to municipalities, etc., are not included; (3) the complete or net price should be stated in money or in terms easily and safely convertible into money; (4) the assessment (on which the ratio of sale price to assessment value is based) should apply to precisely the same property as sold.

Obviously, it is difficult to find any considerable portion of actual real estate transfers which are not defective in one or more of these qualifications. Even in instances where no effort is made to conceal the amount of the consideration, the conditions under which sales are made frequently render them "abnormal." Some courts have defined "market value" as being the fair value as between one who wants to purchase and one who wants to sell, not what could be obtained for the property under peculiar circumstances, when a greater than its fair price could be obtained, nor its speculative value, nor a value obtained from the necessity of another.[37] But, how many actual real estate sales are transacted under all the conditions that determine market value, or in how many instances are the relative positions of purchaser and vendor equally balanced? That there are such sales can not be denied; but in most sections of the country, they form so small a part of the total real estate transactions that, statistically considered, they are rarely available as a basis for a normal average. The application of statistics as a scientific method is limited to data of large numbers. An attempt to use the method by inadequate "sampling" easily leads to error unless, by a thorough analysis, both the "samples" and the results are carefully checked.

In using the "sales method," combined with tax assessment data, certain disturbing elements should not be overlooked. One is the usual *under*-assessment of large tracts of land compared with small tracts such as a railroad acquires.[38] A second is the endless variety of conditions and circumstances which influence the minds of local assessors. In view of these conditions, it is generally admitted that the "sales method" is not applicable to the valuation of any individual tract or of a single parcel of land.

The so-called "opinion method" of appraisal as used by the

[37] *Tedens* v. *Chicago Sanitary Dist.*, 149 Ill. 87; *Brown* v. *Calumet River Co.*, 125 Ill. 606; *Kansas City etc. R. R. Co.* v. *Fisher*, 49 Kan. 17, etc.

[38] An investigation of the Committee on Tax Revision of Virginia showed the following inequalities in the relative assessments on large and small rural

Washington Railroad Commission and in the Minnesota rate cases, and also by the Massachusetts Validation Commission consists in the collection of testimony and opinions of real estate experts and the averaging or the selection of individual estimates and computations. In the Washington appraisal, the state railroad commission, "sitting as a court," heard the testimony not only of the regularly employed right-of-way experts, but also the testimony of expert real estate witnesses whom the right-of-way experts consulted. The opinions of experts brought in by the railroad companies were also heard. On the basis of the information thus obtained the commission determined the "true land value."

This method, it is claimed, has all the advantages of condemnation proceedings. The validity of this contention, however, depends upon whether each individual parcel as acquired by the railroad is appraised separately. In condemnation proceedings it is not merely a question of value of appropriated land but of damages caused by the construction of the railroad. If the testimony of men expert in procuring land for railroad purposes is taken, and if the appraisal is based on conditions as to severance costs, damages, etc., prevailing at the time the railroad is constructed, the "opinion method" is undoubtedly useful. Because of differences in expert estimates, however, there is usually the necessity for some sort of averaging to arrive at a definite value of each right-of-way parcel. Herein lies the weakness of the "opinion method." It is a well-known fact that in condemnation proceedings expert witnesses of each side will give conflicting evidence as to value, resulting in great disparities. The purpose of each side ostensibly is to lower or raise the "average" in the final adjudication, for in spite of the legal principles of assessing damages in condemnation proceedings, the result is frequently a compromise between the claims of the purchaser and of the vendor.

The "opinion method" has been found to be a useful check on

properties (see "Measures of Relative Tax Burdens," by A. E. James, in *Quart. Pubs. Am. Stat. Assoc.*, March, 1916):

Value of Property.	Number of sales	Total assessment.	Total selling price	Ratio per cent.
Total	16,362	$7,929,415	$23,666,730	33.5
Under $500	7,683	718,187	1,536,634	46.7
500—1,000	2,965	776,978	1,992,607	39.0
1,000—2,500	3,219	1,791,904	4,924,387	36.4
2,500—5,000	1,574	1,714,282	5,241,605	32.7
5,000—10,000	635	1,285,946	4,127,999	31.1
Over 10,000	286	1,642,118	5,843,498	28.1

the "sales method." It was thus used in Michigan, Wisconsin, and Minnesota. Professor Pence of the Wisconsin commission has called it "calibration of the sales method";[39] and refers to its successful use in St. Paul by Mr. T. A. Polleys, real estate agent of the Chicago, St. Paul, Minneapolis and Omaha Railway Company.[40] Yet, in the tests used both by Mr. Polleys and Professor Pence, the estimates of individual experts varied considerably, and required averaging for comparison with results obtained by the "sales method."

Undoubtedly the usefulness of the "opinion method," particularly as a check on the "sales method," is due to the fact that local experts in their judgments are likely to recognize and to consider the characteristics and special conditions adhering to individual parcels of land, whereas such matters are likely to be omitted in an "average" derived from a tabulation of real estate transfers.

There remains yet to consider what has been called the "unit system" of real estate valuation.[41] This system aims to establish as a basis of value a standard lot or land parcel of fixed dimensions and of definite situs in each zone or district. A standard lot, for example, may be assumed to be 25 ft. by 100 ft. and occupying a relatively fixed location with reference to the block or zone wherein it is situated. The value of lots or parcels which vary from these standard dimensions or which have more or less advantage with respect to shape and to location within the block are computed in percentages of the value of the standard lot. The range of values is made to conform to a graduated scale. The Somers system as applied in Cleveland, Ohio, had the basic unit of 1-foot frontage and 100-foot depth.[42] The William E. Davis standard lot is 25 ft. by 100 ft. An example of a scale of value for lots varying from the standard (as used in the Somers method) is as follows:

[39] See *State Journal Printing Co.* v. *Madison Gas & Elec. Co.,* Wis. Ry. Com. Repts., 1910, p. 528.

[40] See "Real Estate Valuations," by Thos. A. Polleys, in the *Proceedings of Minnesota Academy of Social Science,* vol. I, pp. 59-78.

[41] For a discussion of the various methods by which "unit values" are obtained see *Some Principles and Problems of Real Estate Valuation,* by Alfred D. Bernard, published by the U. S. Fidelity and Guaranty Company of Baltimore; also *The Valuation of Urban Realty for Purposes of Taxation,* by W. I. King (Bulletin of the Univ. of Wisconsin, no. 689).

[42] See "The Somers System of Realty Valuation," by H. L. Lutz in *Quarterly Journal of Economics,* vol. 25, p. 172.

CURVE OF VALUE

Any lot of a foot strip		*Unit of Value 1 ft. x 100 ft. = 100 per cent*	
Depth of lot	Per cent of unit value	Depth of lot	Per cent of unit value
1	3.10	80	90.90
10	25.00	90	95.60
20	41.00	100	100.00
30	54.00	150	115.00
40	64.00	200	122.00
50	72.00	250	126.05
60	79.50	500	137.85
70	85.60	700	142.35

Certain multiples are added to the scale as illustrated above to allow for the higher values of key lots or corner lots, and adjustments are also made in instances of irregularly shaped lots.

Since the "unit method" aims to establish a definite standard lot of fixed shape and dimensions, it is not readily adaptable to rural lands or to railroad right-of-way. Its application, therefore, is limited largely to urban real estate. There is an endeavor, however, to extend its use to railroad property now being appraised under the federal Valuation act, and for this reason it is considered in these pages.

Two serious objections may be advanced against the unit system of realty valuation. The first is that a value *must be calculated* for the standard lot. This necessitates the application of the "opinion method" or "the sales method" or both. Under the so-called Somers system as applied in Cleveland, Ohio, the assumed value was that agreed upon after "hearings" in which the testimony of local real estate experts and others was taken. By this application of the "opinion method" a so-called "community valuation" was said to be established. Under the William E. Davis system, the value of the standard lot is said to be computed by the "sales method," *i. e.*, from actual transfers, but, in view of the constant change in city realty values, this basis would be useless unless new calculations of the standard were constantly made.

The second objection against the "unit method" is that no allowance is made for "plottage" or for special adaptation to use. Plottage is the added percentage to aggregate value of two or more contiguous lots held in one ownership and attaches when vacant or when covered by a single structure, or it represents the increased value pertaining to a group of lots by reason of the

fact that they admit of more advantageous disposition and use than a single lot.[43] Thus "plottage" is an important element in the valuation of railroad yards and terminals. It has already received recognition in the appraisal of reservoir sites[44] and in the valuation of railroad property for taxation purposes.[45]

V

The foregoing review of the legal and economic phases of land valuation, though not furnishing a guide to the best and most satisfactory methods for appraising railroad right-of-way and other real estate, points to certain considerations which should not be overlooked.

In the first place it is evident both from many court decisions and from state experience that the purchase of railroad right-of-way is not a simple purchase of land area but the acquisition of rights incidental to the necessity of continuity and gradient in roadbed. Accordingly, the computation of right-of-way value based *merely* on the unit of area in most cases is erroneous. The cost of right-of-way, as is well known, comprises distinct though not easily separable elements. The element constituting area acquired is frequently of minor importance compared with another element; namely, the damages arising from severance of land parcels caused by construction of roadbed or the damages to property arising from operation of the railroad. Though there may be a basis for estimating the cost of the "area" element of value, clearly there can be no basis for computing the other element by a mathematical formula. It must be admitted, therefore, that the calculation of right-of-way value on the basis of "average value" of contiguous lands and the like, and the use of multiples of such value to represent excess costs to railroads, are merely devices or substitutes for approximating fair value. It is ridiculous to apply the term "market value" to land in the same

[43] See N. Y. 73 App. Div. 152 and 130 App. Div. 734.

[44] In a recent decision of the United States Supreme Court (*New York* v. *Wm. Sage, Jr.*), decided November 8, 1915, the court denied to the owner whose land was appropriated for the New York City reservoir any part of the advanced value of his lot arising from its union with other lots to form a reservoir site. The condemnation commissioners had allowed an increment of value on the ground that the additional value representing the reservoir site as a whole should be shared between the city and the owners of the land—a proposition to which the court did not assent. See *Advance Opinions* (U. S. Supreme Court), Oct. Term, 1915, p. 25.

[45] *C. C. C. & St. Louis Ry. Co.* v. *Backus*, 154 U. S. 439.

way that it is applied to commodities, units of which have identical attributes and are freely interchangeable. In the purchase of railroad right-of-way the purpose is not to acquire the use of the soil as a physical material but rather to acquire the exclusive use of a "non-substitutable" situs.

To hold that all the various elements and considerations which cause disparities in cost of right-of-way are "neutralized" in an "average" covering a great many units and comprising a large territory is not justified in land valuation. Differences in location, in topography, in fertility, in usefulness, in proximity to population centers, to streams and to transportation facilities militate against the proper use of a statistical average based on quantity. Moreover, in the valuation of right-of-way it is not merely a matter of quantitative or qualitative analysis, but the determination of just compensation for severance, damage, public and private inconvenience, change of drainage, and other losses. Such considerations are not capable of statistical computation. In the language of Justice Hughes: "The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts."[46]

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[46] Minnesota rate cases, 230 U. S. 434.